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09/338,035	06/22/1999	HENRY ESMOND BUTTERWORTH	UK999026	9863

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IDO TUCHMAN  
69-60 108TH STREET  
SUITE 503  
FOREST HILLS, NY 11375

EXAMINER

TANG, KENNETH

ART UNIT

PAPER NUMBER

2127

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/338,035

Applicant(s)

BUTTERWORTH, HENRY  
ESMOND

Examiner

Kenneth Tang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to the Amendment on 12/29/03. Applicant's arguments have been fully considered but they are now moot in view of the new grounds of rejections. Claims 1-18 are presented for examination.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

- a. In claim 1, "in order" is indefinite because it is not made explicitly clear in the claim language whether in order implies sequential order, ordered by priority, etc.
- b. Claims 8 and 9 are rejected for the same reasons as the rejection of claim 1 above.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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**3. Claims 1, 2, 6-9, 11-13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alfieri (US 5,745,778).**

4. As to claim 1, Alfieri teaches a method and system for processing tasks in a data processing system including a microprocessor and an instruction cache wherein tasks of different types are defined in the system, each task type having code associated therewith, the task being processed in order by loading the associated code into the instruction cache for execution on the microprocessor, the method comprising the step of placing the tasks of the same task type into a batch (*col. 2, lines 60-67, col. 3, lines 1-7, col. 4, lines 18-22, Fig. 5B, see Abstract*). As stated above, Alfieri teaches grouping tasks/threads into a batch but fails to explicitly teach that the tasks in a batch are processed before processing the next ordered task. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the system of Alfieri process the task/thread groups before a single thread/task because Alfieri teaches that processing within groups is faster than single operations that cross group boundaries (*col. 3, lines 5-7*).

5. As to claim 2, Alfieri teaches wherein the code associated with at least one type of task fits within the instruction cache, the method comprises the further steps of: processing such a task by loading the associated code on the microprocessor, and, on a determination that there is a further task of like type in the batch, executing the loaded code to process the further task (*col. 3, lines 29-37 and Abstract*).

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6. As to claim 6, Alfieri teaches wherein a task is placed in a batch at the time the task is scheduled (*col. 4, lines 18-22*).
7. As to claim 7, Alfieri teaches wherein the tasks are managed as a queue (*Fig. 5C*).
8. As to claim 8, it is rejected for the same reasons as stated in the rejection of claim 1. In addition, Gillespie teaches using a scheduler to schedule the tasks (*see Abstract*).
9. As to claim 9, it is rejected for the same reasons as stated in the rejection of claim 8.
10. As to claim 11, it is rejected for the same reasons as stated in the rejection of claim 8. In addition, Alfieri teaches batching the new task to the cached task after determining that it has a "like type" (see rejection of claim 8). However, Alfieri fails to explicitly teach that the caching consist when it has the same code (instead of "like type"). However, "Official Notice" is taken that both the concept and advantages of providing that memory caching of the same code or instructions is well known and expected in the art. Memory caching is effective and beneficial because most programs access the same data or instructions over and over. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include memory caching of the same code or instructions to the existing system of Alfieri in order to obtain the benefits mentioned above.

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11. As to claim 12, Alfieri fails to explicitly teach adding the new task to the end of the queue if the task queue does not include the cached task that requires the same code to process the cached task as the new task. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of adding the new task to the end of the queue if the task queue does not include the cached task that requires the same code to process the cached task as the new task because it is not desired and at the same time, efficiency is increased by maintaining the group of tasks with substantially the same code.

12. As to claim 13, it is rejected for the same reasons as stated in the rejection of claim 2.

13. As to claim 15, it is rejected for the same reasons as stated in the rejection of claim 11.

14. As to claim 16, it is rejected for the same reasons as stated in the rejection of claim 12.

15. As to claim 17, it is rejected for the same reasons as stated in the rejection of claim 13.

16. As to claim 18, it is rejected for the same reasons as stated in the rejection of claim 14.

17. **Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alfieri (US 5,745,778) in view of Kirk (US 5,875,464).**

18. As to claim 3, Alfieri fails to explicitly teach the code being logically divided at one or more break points into two or more portions and responding to a break point defined within a first portion of the code to schedule a further task for future execution of a second portion of the code. However, Kirk teaches the code being logically divided at one or more break points into two or more portions (*col 17, lines 55-57*) and responding to a break point defined within a first portion of the code to schedule a further task for future execution of a second portion of the code (*col 23 lines 64-67 and col 24, lines 1-5, and Fig. 13*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of creating and responding breakpoints and to resume from them because it provides for load balancing which increases the efficiency.

19. As to claim 4, it is rejected for the same reasons as stated in the rejection of claim 3.

20. **Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being obvious over Alfieri (US 5,745,778) in view of Kirk (US 5,875,464), and further in view of Nilsen (US 6,438,573).**

21. As to claim 5, Alfieri and Kirk fail to explicitly teach having each portion of code define an atomic operation. However, Nilsen “shows a code fragment which describes an atomic segment of code” (*col 4, lines 32-33*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of atomicity to the existing system of Alfieri for the reason of making the system more reliable. Atomicity is beneficial because it assures that the operation follows through completely and accurately or not at all.

22. As to claim 14, it is rejected for the same reasons as stated in the rejection of claim 5. In addition, Kirk teaches the code being logically divided at one or more break points into two or more portions (*col 17, lines 55-57*) and responding to a break point defined within a first portion of the code to schedule a further task for future execution of a second portion of the code (*col 23 lines 64-67 and col 24, lines 1-5, and Fig. 13*).

**23. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alfieri (US 5,745,778) in further view of Bourekas (US 6,128,703).**

24. As to claim 10, Alfieri fails to explicitly teach having the microprocessor and cache embodied on a single chip. However, from the reference of Bourekas, it is shown that it is common knowledge for a data processing apparatus to have the microprocessor and cache embodied on a single chip (*col 1, lines 61-63*). It would have been obvious to



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one of ordinary skill in the art at the time the invention was made to include the feature of the CPU and cache on a single chip to increase the convenience.

***Response to Arguments***

25. Applicant's arguments have been fully considered but are now moot in view of the new grounds of rejections.

***Conclusion***

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

c. **Gillespie (US 6,269,391 B1)** teaches a scheduling kernel that minimizes cache thrashing, while providing selective control over execution of threads combined into a group defining a virtual machine and identifies the thread, out of all threads in the virtual machine that is to be executed next.

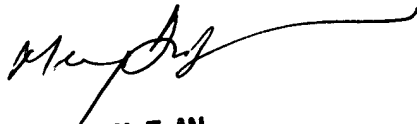
27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (571) 272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kt  
8/17/04



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